

jean-françois

researcher | engineer | software developer

about

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languages

french/english

programming

java, javascript
matlab, python
linux, git, c, c++
latex, tensorflow
azure, mongodb
node, meteor

standards

dicom, ihe, hl7
jpeg 2000, jpip

interests

medical imaging
image compression
machine learning
image analysis
rendering

† not a member of the OIQ

‡ fast-track phd admission

education

- 2011-2016 **Ph.D. in electrical engineering** École de technologie supérieure (ÉTS)
improving medical image compression and transmission
· develop a novel image quality metric adapted to diagnostic imaging
· propose a novel jpeg 2000 bit allocation mechanism
· improve streaming for large image series (ct, mr, tomo, etc.)
· skills: research, compression, streaming, matlab, java, c++, itk/vtk
- 2009-2010 **M.Eng. in electrical engineering (incomplete†)** École de technologie supérieure (ÉTS)
evaluation of the diagnostic quality of lossy compressed medical images
· study medical image quality assessment and diagnostic losslessness
· quantify the ct acquisition parameters that affect compressibility
· skills: research, compression, matlab, java, c++, itk/vtk, cuda
- 2005-2009 **B.Eng. in electrical engineering** École de technologie supérieure (ÉTS)
information technologies and telecommunication specialization

experience

- 2016 (dec-) **software developer** nucleus.io
cloud-based diagnostic workstation with client-side MPR
· design and implement a client-side multi-planar reconstruction renderer
· design and implement a 3d compression algorithm for fast streaming
· design and implement annotation tools such as length, cobb angle, etc
· write highly optimized code using the latest web technologies
· ensure support for ct, mr, pet, ultrasound, large tomosynthesis, etc
· skills: javascript, nosql, mongodb, python, node, webgl, rendering
- 2016 (jun-dec) **postdoctoral fellow** CHUM research centre
improve image-guided prostate cancer brachytherapy treatments
· implement mr-ultrasound fusion and segmentation using machine learning
· study the impact of dual energy ct (dect) on current registration algorithms
· evaluate an experimental non-rigid mr-us fusion workflow in the operating room
· skills: python, tensorflow, machine learning, registration, segmentation
- 2016 (sep-dec) **lecturer** École polytechnique de montréal
procedural programming (inf1005a)
· teach introductory procedural programming using matlab
· skills: matlab, communication, leadership

experience (cont.)

2009-2016	lecturer <i>software development (ele116)</i> <ul style="list-style-type: none"> · teach object oriented programming using java including topics such as ide, debuggers, source version control <i>image processing and analysis (ele747)</i> <ul style="list-style-type: none"> · teach image processing techniques using matlab including topics such as fft, edge detectors and compression · skills: java, matlab, image processing, oop, communication, leadership 	École de technologie supérieure (ÉTS)
2007-2014	teaching assistants <i>healthcare distributed systems (gts840)</i> <ul style="list-style-type: none"> · supervise and grade graduate student lab assignments · present topics such as hl7, ihe and dicom <i>software development environment (ele116)</i> <i>image processing and analysis (ele747)</i> <ul style="list-style-type: none"> · skills: dicom, hl7, healthcare systems, communication, leadership 	École de technologie supérieure (ÉTS)
2009 (jan-sep)	software developer <i>head-up display simulation for military flight simulators</i> <ul style="list-style-type: none"> · implement c/c++ modules to stimulate and simulate avionic systems · implement an opengl solution to simulate a fighter hud · work with clients to address issues and achieve acceptance · skills: c, c++, pascal, opengl, simulation 	CAE inc.
2006-2008	research assistant <i>implementation of a standard compliance validation tool for hl7v3</i> <ul style="list-style-type: none"> · implement a hl7v3 for validation prior to connectathon · provide support for implementors · skills: java, xml, xml schemas, xslt, soap, dicom, ihe, hl7 <i>implementation and evaluation of a medical image streaming framework</i> <ul style="list-style-type: none"> · evaluate jpip for large image stacks and large image streaming · skills: java, jpip, jpeg 2000 	École de technologie supérieure (ÉTS)

awards

2017	NSERC postdoctoral fellowship (declined)	90,000\$
2017	FRQNT postdoctoral fellowship (declined)	70,000\$
2016	GRSTB postdoctoral fellowship	18,000\$
2011	NSERC doctoral Alexander-Graham-Bell scholarship	105,000\$
2011	ÉTS excellence graduate student scholarship	60,000\$
2011	FRQNT doctoral research scholarship (declined)	60,000\$
2009	FRQNT master's research scholarship	30,000\$
2006	NSERC undergraduate student research award	4,500\$

publications

articles in peer-reviewed journals

The utilization of MRI in the operating room

Ménard C , Pambrun J-F, Kadoury S

Brachytherapy. *Elsevier*, 2017

Computed Tomography Image Compressibility and Limitations of Compression Ratio-Based Guidelines

Pambrun J.F. , Noumeir R.

Journal of Digital Imaging. *Springer Science*, 2015

Teaching DICOM by Problem Solving.

Noumeir R. , Pambrun J.F.

Journal of Digital Imaging. *Springer Science*, 2012

Streaming of medical images using JPEG2000 interactive protocol

Pambrun J.F. , Noumeir R.

International Journal of Innovative Computing and Applications. 2012

Using JPEG 2000 Interactive Protocol to Stream a Large Image or a Large Image Set

Noumeir R. , Pambrun J.F.

Journal of Digital Imaging. *Springer Science*, 2010

international peer-reviewed conferences/proceedings

Limitations of the SSIM quality metric in the context of diagnostic imaging

Pambrun J.F. , Noumeir R.

IEEE International Conference on Image Processing (ICIP), 2015

Compressibility variations of JPEG2000 compressed computed tomography

Pambrun J.F. , Noumeir R.

IEEE International Conference of the Engineering in Medicine and Biology Society (EMBC), 2013

Learning DICOM by solving real clinical problems

Noumeir R. , Pambrun J.F.

IEEE-EMBS International Conference on Biomedical and Health Informatics, 2012

Perceptual quantitative quality assessment of JPEG2000 compressed ct images with various slice thicknesses

Pambrun J.F. , Noumeir R.

IEEE International Conference on Multimedia and Expo, 2011

Interoperability testing of integration profiles based on HL7 standard version 3

Pambrun J.F. , Noumeir R.

IEEE International Conference on Information Technology and Applications in Biomedicine, 2010

Hands-on Approach for Teaching HL7 version 3

Noumeir R. , Pambrun J.F.

IEEE International Conference on Information Technology and Applications in Biomedicine, 2010

Streaming of Medical Images Using JPEG 2000 Interactive Protocol

Noumeir R. , Pambrun J.F.

IEEE International Conference on Systems, Signals and Image Processing. 2010

Interoperability Testing Software for Sharing Medical Documents and Images

Berube R. , Pambrun J.F, Noumeir R.

IEEE International Conference on Internet and Web Applications and Services. 2010

Images within the Electronic Health Record

Noumeir R. , Pambrun J.F.

IEEE International Conference on Image Processing. 2009